

## **REMARKS**

### **I. Status of the Claims**

At the time of the Action, Claims 1-25 were pending. Claims 13 and 23 have been rewritten in independent form as Claims 1 and 15, respectively. Claims 13 and 23 were rejected in the Action under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,041,455 to Meyerhof (Meyerhof) in view of U.S. Patent No. 4,937,446 to McKeon (McKeon). Independent Claim 25 has been amended to recite the general recitations of Claim 23. Claims 8, 12-13, and 22-23 have been canceled.

Applicant submits that the pending claims are patentable over the cited references and request that the rejections under § 103 be withdrawn for at least the reasons that follow.

### **II. Independent Claims 1, 15 and 25**

The Action concedes that Meyerhof does not disclose that the predetermined energy is between about 1.5 MeV and 11 MeV as recited in independent Claims 1, 15 and 25. The Action cites McKeon as determining a carbon to oxygen ratio based on high-energy neutron scattering of 4.438 MeV for gamma rays scattered from carbon and 6.1 MeV for gamma rays scattered by oxygen. The Action concludes that it would be obvious to employ the coincidence counting techniques of Meyerhof with the energy levels of McKeon.

However, McKeon is primarily concerned with single inelastic gamma ray events that are not detected in coincidence by McKeon (*see* McKeon, col. 1, line 38-46; col. 2, lines 60-63). In particular, McKeon discusses that a single 4.438 MeV gamma ray is emitted when a high energy neutron is scattered inelastically from carbon, and a 6.1 MeV gamma ray is emitted when a neutron is inelastically scattered from oxygen (*see* McKeon, col. 1, lines 38-42). Nothing in McKeon (or Meyerhof) suggests that the single, inelastic characteristic gamma rays at 4.438 MeV from carbon and at 6.1 MeV from oxygen could be detected using coincidence detection techniques. As such, neither reference teaches or suggest coincidence detection where the first event and the second event sum to a predetermined energy between about 1.5 MeV and about 11 MeV as recited in independent Claims 1, 15 and 25. Therefore, at least one recitation is not taught or suggested by the cited references as required by § 103.

In addition, the detectors of McKeon are spaced relatively far apart (*see* McKeon, Figure 1) in contrast to the closely spaced, cylindrical configuration of Meyerhof (*see*

Meyerhof, **Figure 1**). McKeon discusses that the object of this configuration is to provide "near" and "far" detectors so that carbon and oxygen determinations from spectra measured at both detectors may be combined to produce a representation of oil saturation of the formation corrected for the gamma rays produced by carbon and oxygen atoms in the borehole itself (see McKeon, col. 2, lines 53-59). Therefore, McKeon teaches away from the proposed modification in as much as the purpose of McKeon would be destroyed, at least in part, by the close spacing of the detectors used in Meyerhof, which are used to detect coincidence events at 1.02 MeV (see Meyerhof, **Figure 1** and col. 4, lines 29-34), and there is no motivation to combine Meyerhof and McKeon as required by § 103.

Applicant submits that the rejections of Claims 1, 15 and 25 and claims dependent therefrom under Section 103(a) based on Meyerhof in view of McKeon cannot stand and request that the rejections be withdrawn.

### **III. Conclusion**

In view of the foregoing amendments and remarks, the Applicant respectfully requests that all outstanding rejections to the claims be withdrawn and that a Notice of Allowance be issued in due course.

Respectfully submitted,

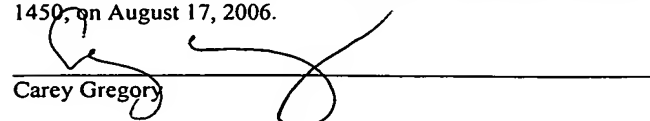


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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450, on August 17, 2006.

  
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